

REMARKS/ARGUMENTS

Claims 1-20 are cancelled; Claims 36-41 are new.

Amended Claim 21 is supported, for example, at previously presented Claim 21 and at specification page 10, Example 4, Table 2, lines 20-24, that demonstrates that additive and ethanol synergistically reduce intake valve deposits. The feature of present Claim 21 that “the ethanol is present in an amount of from 10-75% by volume of the total volume of the gasoline fuel, ethanol, and additive” is supported, for example, at specification page 3, lines 1-2 (e.g., “the alkanol content is ... for example, from 5 to 75% by volume”), combined with specification page 2, lines 36-38 (e.g., “the alkanol...is preferably...ethanol”), and specification page 9, lines 15 and 16 (e.g., ethanol content of “10% by volume”).

Combination the of cited specification support, *supra*, yields a gasoline fuel comprising 10 to 75% ethanol, per M.P.E.P. § 2163.05(III) and In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976). Amended Claims 25-28 are supported, for example, at Claim 21. New Claims 36-40 are supported, for example, at specification page 9, lines 4-6. Amended Claim 41 is supported, for example, at specification page 3, lines 1-4, and Claim 22.

No new matter is added.

Present Claim 21 is drawn to a process of synergistically reducing intake valve deposits in a gasoline engine comprising an intake valve. The process comprises operating the gasoline engine with a gasoline fuel comprising ethanol and an additive. The additive is selected from polyisobutenamine, polyetheramine, polyisobutene succinicimide, a product obtained by Mannich conversion of substituted phenyl with aldehyde and amine, and combinations thereof. Further, the additive and the ethanol synergistically reduce total combustion deposits in the intake valve of the gasoline engine. Finally, the ethanol is present in an amount of from 10-75% by volume of the total volume of the gasoline fuel, ethanol, and additive.

**The anticipation rejection of Claims 21, 24 and 30-35 as being unpatentable in view of Schwahn** is traversed. Schwahn is drawn to “fuel additive compositions for internal combustion engines and to fuels that contain the corresponding additives for internal combustion engines” (see the Abstract of Schwahn). Schwahn does not describe or suggest at least the feature of present Claim 21 and the claims depending therefrom that “the ethanol is present in an amount of from 10-75% by volume of the total volume of the gasoline fuel, ethanol, and additive.” Further, Schwahn does not describe or suggest at least the feature of present Claim 21 and the claims depending therefrom that the additive and the ethanol synergistically reduce total combustion deposits in the intake valve of the gasoline engine (emphasis added). Because Schwahn does not describe or suggest all of the features of present Claim 21 and the claims depending therefrom, Schwahn cannot anticipate these claims. Withdrawal of the anticipation rejection is requested.

**The obviousness rejection of Claims 21-35 as being unpatentable in view of Schwahn and Jarvis** is traversed. As described, *supra*, Schwahn does not describe or suggest the feature of present Claim 21 that the additive and the ethanol synergistically reduce total combustion deposits in the intake valve of the gasoline engine. The Office must therefore rely upon Jarvis to supply this claim feature. However, neither Jarvis nor Schwahn describe or suggest the feature of present Claim 21 and the claims depending therefrom that “the additive and the ethanol synergistically reduce total combustion deposits in the intake valve of the gasoline engine.” Withdrawal of the obviousness rejection is requested on this basis alone.

Further, the Office, at pages 6-7 of the Official Action, concerning the superior and unexpected synergistic result in the Schwahn Declaration (filed along with the response to the previous Office Action), asserts that “independent claim 21 comprises a gasoline fuel containing ethanol in any amount,” that “the results presented are not commensurate in scope

with the degree of protection sought by the claims...[because] [t]he claims are not limited to 50% ethanol which represent the data.”

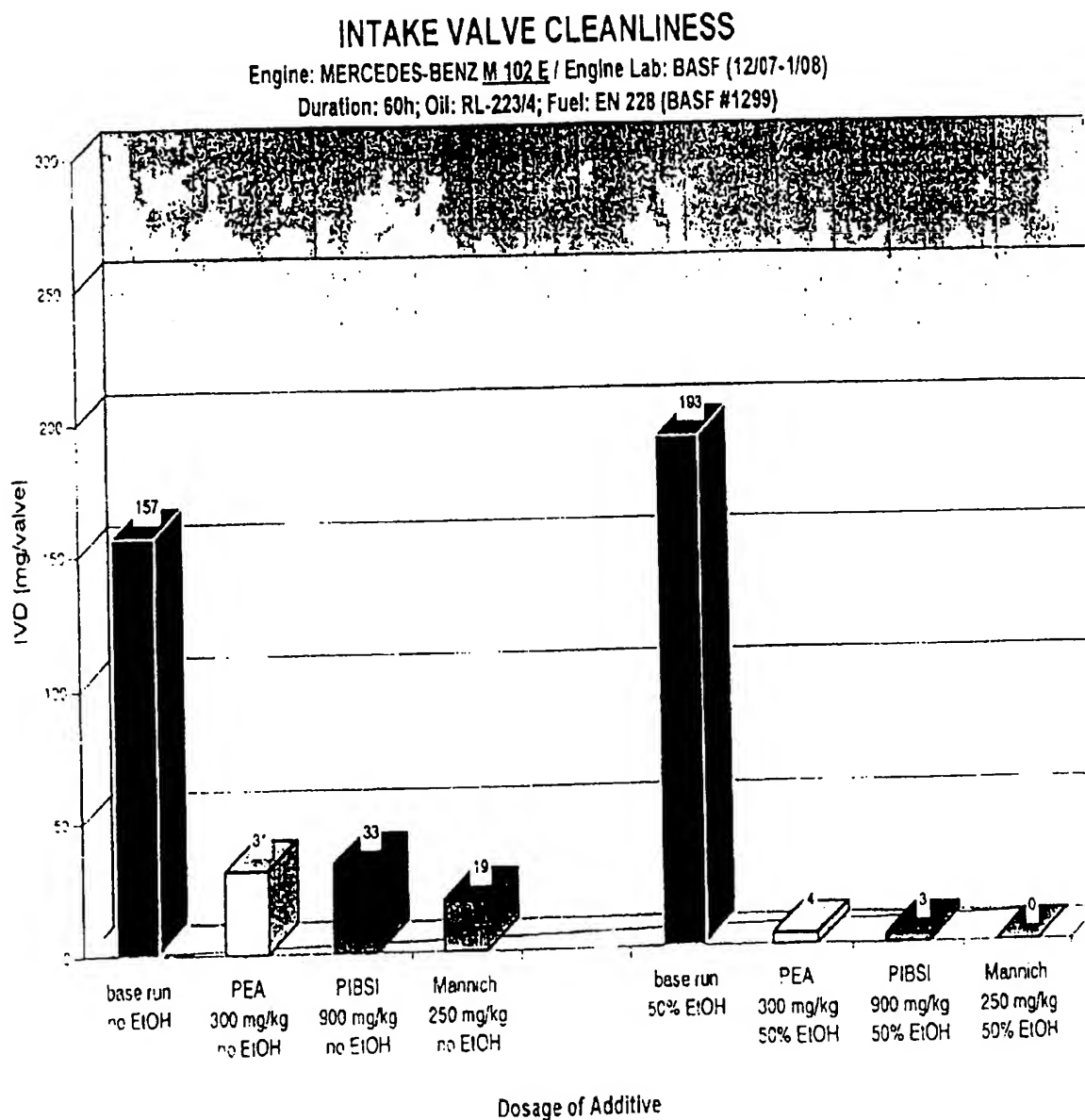
Responsive to the Office’s assertions of results not being commensurate in scope, *supra*, Applicants first note present Claim 21 contains the feature that “the additive and the ethanol synergistically reduce total combustion deposits in the intake valve of the gasoline engine.” Present Claim 21 is therefore limited only to additive and ethanol combinations that act synergistically to reduce intake valve deposits, and is commensurate in scope on this basis alone.

Further, Applicants note Claim 21 contains the feature that “the ethanol is present in an amount of from 10-75% by volume of the total volume of the gasoline fuel, ethanol, and additive,” and thus, the Office’s assertion that the gasoline fuel contains ethanol in any amount is also mooted with respect to Claim 21.

Moreover, Applicants have shown superior and unexpected results in synergistic reduction of valve intake deposits for gasoline containing an additive, and ethanol at representative concentrations of both 10% and 50% by volume as described in the Schwahn Declaration filed April 30, 2009. To further support the unexpected result of synergy, Applicants have submitted, along with this paper, a Declaration (the Schwahn II Declaration). In the Schwahn II Declaration, in its attached Annex, fuels with various ethanol concentrations ranging from 10% to 100% were tested with and without additive for the ability to reduce intake valve deposits in a Ford FFV (10/11)-Saab Cycle engine. As described *supra*, Applicants have previously shown that in the claimed inventive methods, ethanol and additive act synergistically to reduce intake valve deposits. With this as baseline (the Schwahn Declaration filed April 30, 2009, is incorporated herein by reference in its entirety), the data in the Schwahn II Declaration show, for fuel ethanol concentrations ranging from 10% to 100%, the combination of ethanol and additive reduce intake valve

deposits significantly over a range of ethanol concentrations wider than, and inclusive of, the ethanol concentration range of present Claim 21 and the claims depending therefrom. As described at page 2 of the Schwahn II Declaration, “[t]he experimental results show that [additive]...combined with ethanol in a proportion of 10-100%...surprisingly improves (i.e., reduces) IDV [intake valve deposits] more efficiently than in the absence of ethanol....” “Accordingly, this additional data provides further evidence of the surprising finding that the combination of said type of gasoline fuel additive and ....ethanol has a synergistic effect on the reduction of intake valve deposits over a wide range of alcohol content, even extending beyond the claimed range of 10-75%.” Accordingly, Applicants submit that Claim 21 and the claims depending therefrom “are commensurate in scope with the degree of protection sought.”

Finally, concerning the Office’s assertion that “the results presented are not seen to be unexpected,” Applicants note that the additive and the ethanol in Claim 21 act to protect synergistically, and protecting synergistically is different than merely protecting. The Office has provided no cite from Schwahn and Jarvis that specifically describes an additive and ethanol acting synergistically. Applicants’ submit this is because neither Schwahn nor Jarvis describe the synergistic feature of present Claim 21 and the claims depending therefrom. Accordingly, the Office’s assertion is flawed, because it is unsupported by evidence, “that results presented are not seen to be unexpected since the detergent additives of the prior art are seen to be functioning as expected.” At page 3 of the previously submitted Schwahn Declaration, the following figure is shown:



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In the figure, a gasoline containing no ethanol, when combusted, left intake valve deposits (IDV) of 157 mg/valve. A gasoline containing 50% ethanol by volume, when combusted, left intake valve deposits of 193 mg/valve. When different additives were added to the gasoline containing no ethanol, the amount of intake valve deposits post combustion ranged from 19-33 mg/valve. The difference in intake valve deposits between the gasoline

containing 50% ethanol and the gasoline not containing alcohol, post combustion, is equal to  $193 \text{ mg/valve} - 157 \text{ mg/valve} = 36 \text{ mg/valve}$ . Thus, the additives in the gasoline containing 50% ethanol would be expected to reduce the intake valve deposits, per valve, to a range of  $(19 \text{ mg/valve} + 36 \text{ mg/valve})$  to  $(33 \text{ mg/valve} + 36 \text{ mg/valve}) = 55 \text{ mg/valve}$  to  $69 \text{ mg/valve}$ . Instead, the intake valve deposits in the gasoline containing 50% ethanol and the different additives range from  $0 \text{ mg/valve} - 4 \text{ mg/valve}$ . Thus, the additives and the ethanol acted synergistically (emphasis added). This superior result of synergy is not described or suggested by Schwahn or Jarvis, so the superior result is also an unexpected result.

The Table at specification page 10, contains gasoline GF1 that contains no ethanol, and GF2 that contains 10% ethanol by volume. GF1, when combusted, gave an IVD of  $269 \text{ mg/valve}$ . GF2, containing 10% ethanol by volume, gave an IVD of  $293 \text{ mg/valve}$ . The representative additive, when added to GF1 in an amount of  $150 \text{ mg/kg}$  and  $200 \text{ mg/kg}$ , reduced intake valve deposits to  $85 \text{ mg/valve}$  and  $24 \text{ mg/valve}$ , respectively. The difference between GF2 and GF1 for intake valve deposits is the absence of additive is  $293 \text{ mg/valve} - 269 \text{ mg/valve} = 24 \text{ mg/valve}$ . Thus, the additive, when used in  $150 \text{ mg/kg}$  and  $200 \text{ mg/kg}$ , in GF2 would be expected to produce intake valve deposits of  $109 \text{ mg/valve}$  and  $47 \text{ mg/valve}$ , respectively (e.g.,  $85 \text{ mg/valve} + 24 \text{ mg/valve} = 109 \text{ mg/valve}$ ). Instead, the additive produced intake valve deposits of only  $98 \text{ mg/valve}$  and  $15 \text{ mg/valve}$ , respectively, showing that in gasoline containing 10% ethanol by volume, the additive and the ethanol act synergistically to reduce intake valve deposits. This superior result, based on the disclosures of Schwahn and Jarvis, is an unexpected result.

Accordingly, Claim 21, containing the feature that the ethanol and the additive act synergistically to reduce total combustion deposits in the intake valve of the gasoline engine, is commensurate in scope with the data presented to the Office, and limits the ethanol to only those amounts that synergistically in combination with the additive reduce intake valve

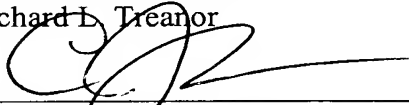
deposits. Finally, as described *supra*, the Office has provided no cite from Schwahn and Jarvis that specifically describes the additive and ethanol acting synergistically. Applicant's submit this is because neither Schwahn nor Jarvis describe the synergistic feature of present Claim 21. Accordingly, the Office's reasoning is flawed, because it is unsupported by evidence, "that results presented are not seen to be unexpected since the detergent additives of the prior art are seen to be functioning as expected."

Withdrawal of the obviousness rejection is requested.

Applicants submit the present application is now in condition for allowance. Early notification to this effect is earnestly solicited.

Respectfully submitted,

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